Does Prompt Compliance with the COSO 2013 Framework Signal a Commitment to a Strong Internal Control Environment?

Abstract

In this study, we investigate the determinants of compliance with the Committee of Sponsoring Organizations of the Treadway Commission (COSO) 2013 framework and whether prompt compliance provides a signal of a commitment to a strong internal control environment. COSO 2013 framework represents the biggest change to the internal control framework in more than two decades. In firms' first fiscal year following the supersession of the COSO 1992 framework, only 91 percent of firms in our sample were in compliance with the updated COSO 2013 framework. We find that compliance with the updated framework is more likely among firms that are larger, older, more highly leveraged, less complex, that operate in more litigious industries, and that have an effective internal control environment. Controlling for potential selection bias, we next examine whether compliance with the updated framework is indicative of a higher level of control consciousness and governance as evidenced by more conservative financial reporting. Finally, we use short-window market reactions to quarterly earnings surprises to examine whether investors perceive compliance with the updated framework as an indication of the overall control consciousness and governance of the firm. We find that firms that comply with the COSO 2013 framework exhibit more conservative financial reporting and that investors react more positively to these firms' quarterly earnings surprises following initial compliance. Importantly, these results hold among a sample of firms without reported material weaknesses in internal controls. These results provide evidence that firms can help alleviate agency costs by signaling their commitment to a strong internal control environment.

Keywords: COSO2013 internal control framework; Accounting conservatism; prompt compliance

I. INTRODUCTION

A long stream of research, beginning with Jensen and Meckling (1976), suggests that agency problems can arise in corporate settings when there is greater information asymmetry between managers and shareholders. Prior research also suggests that corporate internal control systems can play an important governance role in monitoring managerial behavior and reducing agency costs (e.g., Doyle et al. 2007a; Goh and Li 2011). This is not only evidenced by lower earnings quality among firms with weak internal control systems (Doyle et al. 2007a), but also by evidence of negative investor reactions to disclosures of such weaknesses (Hammersley et al. 2008). Although the absence of disclosed internal control weaknesses provides some indication of the effectiveness of a firm's control environment, disclosure is limited to known weaknesses that could materially impact the reported numbers *as of* the financial reporting date. No disclosure is required for material weaknesses existing during the reporting period but remediated before the period end date. Additionally, prior research suggests that a large proportion of firms with material weaknesses in internal controls fail to report in a timely manner (Rice and Webber 2012). To help alleviate agency costs, managers may make intentional decisions to signal their commitment to a strong control environment.

In this study, we examine whether prompt compliance with the most up to date internal control framework signals a commitment to a strong internal control environment. Such a commitment is likely to manifest itself in more effective internal controls and more conservative financial reporting (Garcia et al. 2009; Goh and Li 2011). Specifically, we investigate determinants of prompt compliance with the Committee of Sponsoring Organizations of the Treadway Commission (COSO) 2013 framework using several factors likely associated with the strength of a firm's overall control environment. We then perform several analyses to investigate whether firms that promptly comply with COSO 2013 provide more conservative financial reporting and whether

investors perceive compliance with the updated framework as an indication of a firm's commitment to a strong system of internal control.

COSO released its original internal control framework in 1992, which became the basis for auditors to assess and report on their clients' internal control over financial reporting under the provisions of the Sarbanes-Oxley Act of 2002 (SOX). However, since the release of this original framework, businesses and operating environments have changed dramatically. In response to these changes, COSO introduced its updated internal control framework, also known as the 2013 internal control framework, on May 14, 2013 (hereafter referred to as the COSO 2013 framework). During the transition period from May 14, 2013 to December 15, 2014, public firms and their auditors had the choice to use either the original 1992 framework or the updated 2013 framework as the underlying basis for their internal control assessment as long as the applicable framework was disclosed. Following the transition period, however, COSO considers the 1992 framework as having been superseded. Despite this, in firms' first fiscal year following supersession of the COSO 1992 framework, we find that only 91 percent of firms in our sample comply with the updated COSO 2013 framework.

We perform our tests using a sample of firms subject to the reporting requirements of Section 404(b) of SOX, which requires auditor attestation on the effectiveness of internal control over financial reporting, with fiscal years ending after December 15, 2014 through May 31, 2016. Because our sample period begins after the transition period, firms using the COSO 2013 framework are identified as "compliance" firms. We refer to "noncompliance" firms as those that continue to use the COSO 1992 framework. Our sample consists of 3,564 firms that use the updated COSO 2013 framework, and 347 firms that continue to use the original 1992 framework. Building on prior research, (Ge and McVay 2005; Doyle et al. 2007b; Feng et al. 2015), we examine the determinants of compliance with the COSO 2013 framework based on variables associated with the strength of a firm's control environment, which

include the disclosure of material weaknesses in internal controls, firm size, leverage, age, complexity, the occurrence of significant or unusual transactions, financial distress, whether the firm operates in a litigious industry, and the risk of financial reporting improprieties. We find that compliance is more likely among firms that do not disclose internal control weaknesses, are larger, more highly leveraged, older, less complex, are involved in more merger and acquisition activity, have restructuring charges, and operate in a more litigious industry.

Next, we examine the relation between compliance with the COSO 2013 framework and financial reporting conservatism. We employ three measures of conservatism: *C_SCORE* developed by Khan and Watts (2009), *CON_ACC* suggested by Givoly and Hayn (2000) and Ahmed et al. (2002), and the asymmetric timeliness of earnings following Basu (1997). Because compliance with the COSO 2013 framework is not randomly determined, we address the possibility of selection bias by estimating a two-stage Heckman selection model. We use the determinants model discussed above as our first stage model. To satisfy the exclusion restriction, we use the indicator variable for whether the firm is a client of KPMG.[1] From this model, we derive the inverse Mills ratio to control for the unobservable factors associated with the decision to comply with the COSO 2013 framework. After controlling for known determinants of accounting conservatism and for potential self-selection bias, we find a positive association between firms complying with the COSO 2013 framework and all three measures of conservatism. These findings are consistent with our hypothesis that firms promptly complying with the COSO 2013 framework exhibit a commitment to control consciousness and strong governance.

[1] Based on discussions with a COSO board member, KPMG did not encourage early compliance with the updated framework. We believe this variable meets the criteria of an exclusion restriction variable as it should affect the decision to comply, but should not necessarily affect the outcome variables of our second stage models. We include an indicator variable for whether the firm's auditor is KPMG and find that this variable negatively predicts the likelihood of compliance with the COSO 2013 framework.

We next examine whether investors perceive compliance with the COSO 2013 framework as an indication of a higher level of control consciousness and governance, as evidenced by more positive short-window market reactions to quarterly earnings surprises. We find that firms complying with the COSO 2013 framework experience more positive short-window reactions to quarterly earnings surprises, suggesting that investors perceive these firms' earnings to be more informative and of higher quality. In further analysis, we incorporate pre-implementation quarterly observations beginning with firms' second fiscal quarter of 2013 and use a difference-in-difference estimation to determine whether the investor reaction to quarterly earnings surprises is incrementally higher in the quarters following disclosure of COSO 2013 compliance. We document a higher earnings response coefficient in the quarters following disclosure of COSO 2013 compliance, providing further evidence that prompt compliance with the updated framework signals the firm's overall commitment to control consciousness and governance.

In additional analyses, we examine whether these relations hold when limiting our sample to firms without disclosed internal control weaknesses. If prompt compliance with the updated COSO framework does indeed provide an indication of a strong commitment to internal control and governance, then we would expect to observe a consistent result among firms with no reported weaknesses in internal controls for which investors have less ability to differentiate variation in the strength of the internal control environment. Consistent with our expectation, we find that among firms with no reported weaknesses in internal control, prompt compliance with the COSO 2013 framework is associated with greater financial reporting conservatism and more positive market reactions to quarterly earnings surprises.

This study contributes to the literature in several ways. First, the results of this study highlight that a non-trivial amount of companies did not comply with the COSO 2013 framework following supersession of the COSO 1992 framework. To our knowledge, this is the first study that examines the determinants of

compliance with the COSO 2013 framework. Second, this study contributes to the literature by examining whether prompt compliance with an updated internal control framework can serve as a signal of a strong system of internal controls (e.g., Doyle et al. 2007a; Goh and Li 2011) to help alleviate agency costs. The results support this notion. Specifically, compliance with the COSO 2013 framework is associated with more conservative financial reporting and improves investors' perceptions of the underlying quality of the earnings numbers. These results highlight the importance of prompt compliance with future framework updates, new rules, or new regulation involving internal control over financial reporting.

The remainder of this paper is organized as follows. Section II reviews prior literature and develops the hypotheses. Section III describes sample selection and research design. Section IV presents our main results. Section V provides additional analyses. Section VI concludes the paper.

II. BACKGROUND, PRIOR LITERATURE, AND DEVELOPMENT OF HYPOTHESES

COSO's 2013 Internal Control Framework

On May 14, 2013, COSO released its updated internal control framework, known as the COSO 2013 framework.[2] At the time, the COSO Board considered it proper for public companies to continue to use their original 1992 framework during the transition period between May 14, 2013 and December 15, 2014 (COSO 2013). During this period, companies and their auditors were required to clearly disclose which framework they used. Following the transition period, the original 1992 framework is considered superseded by COSO. The COSO 2013 framework is similar to the original 1992 framework, but provides several significant changes. Although the five components of a firm's internal control system – control environment, risk assessment, control activities, information and communication, and monitoring activities – remain intact, the updated framework provides "explicit articulation of the 17 principles" that are meant to codify the fundamental concepts related to those five components (COSO 2013). In addition to these

[2] http://www.coso.org/documents/990025P_Executive_Summary_final_may20_e.pdf.

relevant 17 principles, the COSO 2013 framework introduces 81 points of focus which provide greater detail and insight into the principles. The primary goal of the updated COSO 2013 framework is to enhance assessment and evaluation to determine if the explicitly stated principles are present and functioning (i.e., less ambiguity), reflect increased relevance and use of technology and related controls, incorporate enhanced discussion of governance concepts, enhance anti-fraud expectations, and increase the focus on non-financial reporting objectives.

Determinants of Compliance with COSO 2013 Framework

To date, there is no research that examines the determinants of compliance with the COSO 2013 framework. If prompt compliance is indicative of firms' commitment to strong governance and a strong internal control environment then we would expect that the likelihood of compliance will vary based on factors associated with the strength of a firm's internal control. Doyle et al. (2007b) investigate several potential firm characteristics that determine internal control material weaknesses using 779 firms that disclose material weaknesses from August 2002 to 2005. Relying on prior research findings, we examine whether these firm characteristics, which include the disclosure of material weakness in internal control, firm size, leverage, age, complexity, the occurrence of unusual or significant transactions, financial distress, litigation risk, and the risk of misstatement, are associated with compliance with the COSO 2013 framework. We elaborate on each of these firm characteristics below. Because the disclosure of a material weakness in internal controls is a clear indication of a weak internal control environment, we argue that prompt compliance with the COSO 2013 framework will be less likely for these firms. Our first hypothesis (stated in alternative form) is as follows:

H1a: *Ceteris paribus,* firms with disclosed material weaknesses in internal controls are less likely to comply with the COSO 2013 framework immediately following the transition period.

Apart from the disclosure of a material weakness in internal controls, other firm characteristics should be associated with the overall internal control environment of the firm. For example, firm size has been shown to be associated with stronger internal control systems (Ge and McVay 2005; Doyle et al. 2007b). Smaller firms tend to have less sophisticated internal control systems and fewer resources than larger firms (e.g., fewer investments in technology or less experienced or competent staff). Smaller firms are also less likely to benefit from economies of scale when they manage and operate their internal control systems (Doyle et al. 2007b). Furthermore, smaller firms are more likely to have limited time and resources to monitor their internal control system. The adoption and implementation of the COSO 2013 framework requires dedicated resources to identify relevant changes necessary to internal controls, update existing documentation, and ensure compliance with the new framework. Smaller firms with greater resource constraints are likely at a disadvantage. This leads to our next hypothesis (stated in alternative form):

H1b: *Ceteris paribus*, larger firms are more likely to comply with the COSO 2013 framework immediately following the transition period.

We also consider a firm's financial leverage as a potential factor affecting compliance with the COSO 2013 framework. On the one hand, highly leveraged firms may not have sufficient resources and funds to allocate to the adoption and implementation of the COSO 2013 framework. On the other hand, firms with higher leverage may have sufficient (or more) cash to acquire the resources necessary to promptly comply with the new framework. As such, we do not make a directional prediction on the association between leverage and compliance with the COSO 2013 framework. Our next hypothesis (stated in null form) is as follows:

H1c: *Ceteris paribus*, compliance with the COSO 2013 framework immediately following the transition period is not associated with more highly leverage firms.

Firm age is also a potential determinant of compliance with the COSO 2013 framework. Because younger firms are growing and changing more rapidly, these firms may not have resources to establish or invest in a sophisticated internal control system (Feng et al. 2015). Additionally, they may be reluctant to invest the time and resources necessary for prompt compliance. Thus, we expect that older firms are more likely to comply with the COSO 2013 framework, which leads to the following hypothesis (stated in the alternative):

H1d: *Ceteris paribus*, older firms are more likely to comply with the COSO 2013 framework immediately following the transition period.

Firm complexity could influence prompt compliance with the COSO 2013 framework. Doyle et al. (2007b) find that firm complexity increases the likelihood of disclosing a material weakness in internal controls. Complex firms may need more time to assess and document compliance with the updated internal control framework. Thus, we expect that a more complex firm will be less likely to promptly comply with COSO 2013 framework. This leads to the following hypothesis (stated in the alternative):

H1e: *Ceteris paribus*, more complex firms are less likely to comply with the COSO 2013 framework immediately following the transition period.

We also consider whether the occurrence of significant or unusual transactions during the year the updated framework becomes effective. Restructuring and merger and acquisition activities are a time-consuming process for a firm. Not only will these types of events affect the structure of the firm and its related internal controls and processes, but they will divert the time and attention of the accounting and financial reporting staff that would also likely be responsible for assessing and updating documentation related to compliance with the COSO 2013 framework. These types of activities have been shown to increase the likelihood of material weaknesses in internal control (Doyle et al. 2007b). Thus, we expect that firms undergoing

restructuring and involved in merger and acquisition activity are more likely to delay compliance with the COSO 2013 framework. This leads to the following hypothesis (stated in the alternative):

H1f: *Ceteris paribus*, compliance with the COSO 2013 framework immediately following the transition period is less likely among firms experiencing restructuring or merger and acquisition activity.

Additionally, firms in financial distress may lack the necessary resources to dedicate to prompt compliance with the updated framework. As such, we expect that firms experiencing financial distress are less likely to comply with the COSO 2013 framework. This leads to our next hypothesis (stated in alternative form):

H1g: *Ceteris paribus*, financially distressed firms are less likely to comply with the COSO 2013 framework immediately following the transition period.

Finally, we examine whether litigation risk or misstatement risk affect the likelihood of complying with the updated framework. Firms in litigious industries may be more inclined to adhere to industry norms to avoid potential litigation. Although compliance with the COSO 2013 framework is not enforced by a regulatory authority, managers may believe that noncompliance would increase the risk of litigation. Firms with greater misstatement risk may have weaker internal controls. If the control environment is weak, prompt compliance may be less likely. As such, we hypothesize the following (stated in the alternative):

H1h: *Ceteris paribus*, firms in litigious industries are more likely to comply with the COSO 2013 framework immediately following the transition period; and

H1i: *Ceteris paribus*, firms with greater misstatement risk are less likely to comply with the COSO 2013 framework immediately following the transition period.

COSO 2013 Framework Compliance and Accounting Conservatism

The COSO 2013 framework is designed to reflect the environment surrounding organizations

(COSO 2013) and should enable organizations to effectively design, implement, and reevaluate their internal controls associated with operating, reporting, and compliance objectives (COSO 2013). Prior research suggests that effective internal controls can act as an important corporate governance mechanism in monitoring managerial behavior and thus mitigating agency problems (Jensen 1993). Consistent with this, prior studies document that firms with internal control material weaknesses have lower financial reporting quality (Doyle et al. 2007a; Ashbaugh-Skaife et al. 2008), higher information risk (Beneish et al. 2008; Ashbaugh-Skaife et al. 2009), and less accurate management guidance (Feng et al. 2009). Furthermore, Goh and Li (2011) find that internal control quality is positively related to conditional accounting conservatism. They find that firms with material weaknesses in internal controls exhibit less conservative financial reporting. They also find that firms that subsequently remediate material weaknesses exhibit greater conservatism compared to firms that continue to report material weaknesses in internal controls. Prior studies also highlight how conservative policies and choice on accounting matters helps alleviates agency conflicts between mangers and shareholders (Holthausen and Watts 2001; Ahmed et al. 2002; Watts 2003a; Ball and Shivakumar 2006). Consistent with this, Garcia et al. (2009) find a positive association between conditional accounting conservatism and strong corporate governance. The results of these studies suggest that conservative financial reporting is indicative of a commitment to control consciousness and governance.

To help alleviate agency costs, managers may promptly comply with the updated framework to signal the firm's commitment to strong governance and a strong internal control environment. As such, we expect that prompt compliance with the COSO 2013 framework is positively associated with accounting conservatism. This leads to the following hypothesis (stated in alternative form):

H2: *Ceteris paribus*, firms that comply with the COSO 2013 internal control framework after the transition period have more conservative accounting than noncompliance firms.

COSO 2013 Framework Compliance and Investor Perceptions of Earnings Quality

If compliance with the COSO 2013 framework is an intentional signal of management's commitment to a strong internal control environment then investors should find these firms' earnings more informative relative to noncompliance firms. Prior research finds that investors react negatively to internal control weakness disclosures (Hammersley et al. 2008) suggesting increased risk or uncertainty in that firm's future earnings. Additionally, firms' earnings response coefficients increase after the improvements or enhancements to governance and internal controls. For example Chan et al. (2012) find increased earnings response coefficients following adoption of compensation clawback provisions. Given that compliance with the COSO 2013 framework is a potential signal of a firm's commitment to a strong internal control environment and higher financial reporting quality, we hypothesize that market participants find quarterly earnings surprises more informative for these firms relative to the earnings surprises of noncompliance firms, particularly after the initial disclosure of compliance. This leads to the following hypothesis (stated in alternative form):

H3: *Ceteris paribus*, firms that comply with the COSO 2013 internal control framework after the transition period have higher quarterly earnings response coefficients than noncompliance firms, which are incrementally more informative following initial disclosure of compliance.

III. SAMPLE AND RESEARCH DESIGN

Sample Selection

To obtain the sample, we use the Audit Analytics database to identify whether firms disclose compliance with the COSO 2013 framework in the first fiscal year following the effective date of the updated framework (i.e., firms with fiscal years ending after December 15, 2014 through May 31, 2016). We obtain data related to internal control weaknesses and going concern opinions, from Audit Analytics.

We obtain annual financial data from the Compustat annual database and monthly stock return data from the CRSP database. We collect segment data from the Compustat Segment file. We merge these datasets and remove firms in financial industries (SIC codes 6000-6999) (Ahmed and Duellman 2013). We allow our sample sizes to vary slightly based on data availability for the variables in the respective models.

Empirical Models

Determinants of Compliance with COSO's 2013 Framework

We first examine the determinants of compliance with the COSO 2013 framework using a sample of firms with fiscal years ending after December 15, 2014 through May 31, 2016. As discussed above, we model the likelihood of prompt compliance with the COSO 2013 framework as a function of firm characteristics associated with the strength of a firm's internal control. To do this, we estimate the following logistic regression model:

$$\begin{aligned} Prob\,(Compliance_{i,t}=1) = F(&\beta_0 + \beta_1 ICMW_{i,t} + \beta_2 Size_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 Firm\_Age_{i,t} \\ &+ \beta_5 Segments_{i,t} + \beta_6 Foreign\_Operations_{i,t} + \beta_7 M\&A_{i,t} \\ &+ \beta_8 Restructuring_{i,t} + \beta_9 Aggregate\_Losses_{i,t} + \beta_{10} Going\_Concern_{i,t} \\ &+ \beta_{11} Litigation_{i,t} + \beta_{12} F\_SCORE_{i,t} + \beta_{13} KPMG_{i,t}), \end{aligned} \quad (1)$$

where *Compliance* is an indicator variable equal to one if a firm uses the COSO 2013 internal framework after December 15, 2014 and zero otherwise. We build on prior research findings examining determinants of internal control weaknesses (Doyle et al. 2007a), and examine whether compliance with the updated framework is a function of disclosure of material weaknesses in internal control, firm size, leverage, age, complexity, the occurrence of unusual or significant transactions, financial distress, litigation risk, and the risk of misstatement. We measure firm size (*Size*) using the natural logarithm of total assets. We measure leverage (*Leverage*) as the sum of short-term and long-term debt divided by total assets. We measure firm age (*Firm_Age*) using the natural logarithm of the number of years a firm has data on the CRSP

database. We capture firm complexity using the natural logarithm of the sum of the number of operating and geographic segments (*Segments*) and an indicator variable for whether the firm has foreign operations (*Foreign_Operations*). We capture significant or unusual transactions using an indicator variable for whether a firm has restructuring charges (*Restructuring*) and an indicator variable for whether a firm is engaged in a merger or acquisition during the year (*M&A)*. We capture financial distress using an indicator variable if the firm reports a loss in the current and prior year (*Aggregate_Losses*) and an indicator variable if the firm received a going-concern audit report modification (*Going_Concern*). Following Francis et al. (1994), we use an indicator variable for firms in litigious industries (i.e., SIC codes 2833–2836, 3570–3577, 3600–3674, 5200–5961, and 7370) (*Litigation*). Following Dechow et al. (2011), we use the F-score to capture misstatement risk (*F_SCORE*).[3] Finally, we include an indicator variable if the firm's auditor is KPMG (*KPMG*) based on discussions with a COSO board member suggesting that KPMG did not encourage early compliance with the updated framework. Additionally, we control for industry fixed effects in equation (1) and use robust standard errors clustered at the firm level. All variables are defined in Appendix A.

Compliance with COSO's 2013 Framework and Accounting Conservatism

We next investigate the relation between compliance with the COSO 2013 framework and accounting conservatism. To do this, we estimate the following OLS regression model:

$$\begin{aligned} ACC\_Conservatism_{i,t} = {} & \beta_0 + \beta_1 Compliance_{i,t} + \beta_2 Size_{i,t} + \beta_3 Leverage_{i,t} \\ & + \beta_4 Market\text{-}to\text{-}Book_{i,t} + \beta_5 ROA_{i,t} + \beta_6 Firm\_Age_{i,t} + \beta_7 Sales\_Growth_{i,t} \\ & + \beta_8 Rd\_Adv_{i,t} + \beta_9 Litigation_{i,t} + \beta_{10} Big4_{i,t} + \beta_{11} Inverse\_Mills\_Ratio_{i,t} \\ & + \Sigma_{i,t} Industry\_Dummy + \varepsilon_{i,t}, \end{aligned} \quad (2)$$

[3] We provide a detailed summary of the construction of the F-score in Appendix C.

where *ACC_Conservatism* represents three different dependent variables, *C_SCORE*, *CON_ACC*, and *CON_SKEWNESS*. We estimate *C_SCORE*, a measure of conditional conservatism, following Khan and Watts (2009) (See Appendix B for more details). Larger values of *C_SCORE* indicate greater conditional accounting conservatism. Additionally, we use a measure of unconditional conservatism, *CON_ACC*, following Givoly and Hayn (2000), Ahmed et al. (2002), and Ahmed and Duellman (2013). We calculate *CON_ACC* as net income before extraordinary items plus depreciation expense minus cash flow from operations, deflated by average total assets, averaged over a 3-year period centered on year t. We multiply this measure by negative one so that higher values of *CON_ACC* mean greater unconditional accounting conservatism. Finally, we use another unconditional conservatism measure, *CON_SKEWNESS*, following Givoly and Hayn (2000) and Ahmed and Duellman (2013). This measure is calculated as the difference between cash flow skewness and earnings skewness. The skewness of cash flow (earnings) is defined as $(x-\mu)^3/\sigma^3$ where x is cash flows (earnings), and μ and σ are the mean and standard deviation of cash flows (earnings) over the last five years. Higher values of *CON_SKEWNESS* indicate greater unconditional accounting conservatism. We control for industry fixed effects in equation (2) and use robust standard errors clustered at the firm level.

The variable of interest in equation (2) is an indicator variable, *Compliance*, which we predict to be positive. Based on prior studies (Ahmed et al. 2002; Ahmed and Duellman 2007, 2013; Givoly et al. 2007; Roychowdhury and Watts 2007; LaFond ad Roychowdhury 2008; LaFond and Watts 2008; Goh and Li 2011; Zhang 2012), we control for firm characteristics and external auditor characteristics that have been shown to affect accounting conservatism. Specifically, we control for firm size (*Size*) as LaFond and Watts (2008) document that larger

firms have less information asymmetry, thereby decreasing the demand for conservatism. In contrast, as Watts and Zimmerman (1978) argue, large firms are more likely to face large political costs so that they engage in more conservative accountings. Given the two sides of the argument, we expect no relationship between *ACC_Conservatism* and *Size*. We also include firm leverage (*Leverage*) as a control variable. Ahmed et al. (2002) argue that highly leveraged firms tend to have more conservative accounting due to their greater bondholder-shareholder conflicts. Following Roychowdhury and Watts (2007) and Ahmed and Duellman (2013), we control for the market-to-book ratio (*Market-to-Book*). Ahmed and Duellman (2013) find a negative relation between accounting conservatism and the market-to-book ratio. Firms with high market-to-book ratio are likely to have more growth opportunities, thereby increasing information asymmetry between managers and investors. Thus, there will likely be an increase in demand for accounting conservatism (LaFond and Watts 2008). We control for return on assets (*ROA*) because Ahmed et al. (2002) document that firms with a higher return on assets choose more conservative accounting. We include firm age (*Firm_Age*) because Khan and Watts (2009) predict a negative relation between firm age and accounting conservatism. We expect that accounting conservatism decreases with firm age. Following Ahmed et al. (2002), we control for sales growth (*Sales_Growth*). Ahmed et al. (2002) and Ahmed and Duellman (2007, 2013) find that sales growth is negatively related to the accrual-based conservatism measure, *CON_ACC*. We expect a negative relation between *CON_ACC* and *Sales_Growth*. We control for research and development (R&D) and advertising expenditures (*Rd_Adv*) as Ahmed and Duellman (2007, 2013) argue that firms with high R&D and advertising expenditures use more conservative accounting. Following Basu (1997) and Watts (2003a), we control for whether a firm is a member of a litigious industry (*Litigation*). We also control for whether a firm is audited by a

Big 4 auditor (*Big4*). We expect firms with a Big 4 auditor to be more conservative. We include the inverse Mills ratio (*Inverse_Mills_Ratio*) from the determinants model in equation (1) to control for the unobservable factors associated with a firm's decision to comply with the COSO 2013 framework. Finally, as in Givoly et al. (2007), we include industry fixed effects to control for variation in accounting conservatism across industries. All variables are defined in Appendix A.

Our third proxy for accounting conservatism is based on the Basu (1997) asymmetric timeliness measure. Building on the Basu (1997) specification, we estimate the following regression model:

$$\begin{aligned} NI_{i,t} = {} & \beta_0 + \beta_1 DR_{i,t} + \beta_2 Compliance_{i,t} + \beta_3 Size_{i,t} + \beta_4 Leverage_{i,t} \\ & + B_5 Market\text{-}to\text{-}Book_{i,t} + \beta_6 Litigation_{i,t} + \beta_7 DR_{i,t} * Compliance_{i,t} \\ & + \beta_8 DR_{i,t} * Size_{i,t} + \beta_9 DR_{i,t} * Leverage_{i,t} + \beta_{10} DR_{i,t} * Market\text{-}to\text{-}Book_{i,t} \\ & + \beta_{11} DR_{i,t} * Litigation_{i,t} + \beta_{12} RET_{i,t} + \beta_{13} RET_{i,t} * Compliance_{i,t} \\ & + \beta_{14} RET_{i,t} * Size_{i,t} + \beta_{15} RET_{i,t} * Leverage_{i,t} + \beta_{16} RE_{i,t} * Market\text{-}to\text{-}Book_{i,t} \\ & + \beta_{17} RET_{i,t} * Litigation + \beta_{18} DR_{i,t} * RET_{i,t} + \beta_{19} DR_{i,t} * RET_{i,t} * Compliance_{i,t} \\ & + \beta_{20} DR_{i,t} * RET_{i,t} * Size_{i,t} + \beta_{21} DR_{i,t} * RET_{i,t} * Leverage_{i,t} \\ & + \beta_{22} DR_{i,t} * RET_{i,t} * Market\text{-}to\text{-}Book_{i,t} + \beta_{23} DR_{i,t} * RET_{i,t} * Litigation_{i,t} \\ & + \Sigma_{i,t} Industry\_Dummy + \varepsilon_{i,t}, \end{aligned} \tag{3}$$

where *NI* is defined as the earnings before extraordinary items divided by the market value of equity at the beginning of the fiscal year. *DR* is an indicator variable equal to one if a firm's return is negative and zero otherwise. *RET* is the buy-and-hold return over the fiscal year. The variable of interest in equation (3) is β_{19}, the coefficient on the triple interaction of *DR*, *RET*, and *Compliance*, which we predict to be positive. As in equation (2), we control for industry fixed effects. All other variables are defined in Appendix A.

Compliance with COSO's 2013 Framework and Investor Perceptions of Earnings Quality

We next investigate whether compliance with the COSO 2013 framework affects investor perceptions about the quality of the firm's earnings. To do this, we examine whether the short-window earnings response coefficient (ERC) to quarterly earnings surprises is more positive for compliance firms. To do this, we estimate the following OLS regression model following Francis and Ke (2006) and Ghosh et al. (2009):

$$CAR = \beta_0 + \beta_1 FERR_q + \beta_2 Compliance + \beta_3 FERR_q * Compliance + \beta X + \beta Industry\ FE + \beta Quarter\text{-}Year\ FE + \beta FERR_q * X + \beta FERR_q * Industry\ FE + \beta FERR_q * Quarter\text{-}Year\ FE + \varepsilon_{it} \quad (4)$$

where *CAR* is the abnormal (i.e., market-adjusted) returns cumulated over days [-1, +1] relative to the quarterly earnings announcement. *FERR* is the analyst forecast error, measured as the difference between reported quarterly earnings per share and the most recent median consensus analyst earnings forecast, deflated by prior quarter stock price. *X* is a vector of control variables following prior research (Francis and Ke 2006; Ghosh et al. 2005; Ghosh et al. 2009), which includes the absolute value of *FERR* (*absFERR*), an indicator variable if net income for the quarter is less than zero (*Loss*), an indicator variable if special items is five percent or more of total assets (*Restructure*), the ratio of short and long-term debt to total equity (*DE*), an indicator variable for the last fiscal quarter in the respective year (*QTR4*), the natural log of the market value of equity (*LnMV*), and the standard deviation of market-adjusted buy-and-hold returns (*STD_Return*).[4] Finally, we include industry and quarter-year fixed effects to control for variation in short-window cumulative abnormal returns across industries and over time.

[4] Market-adjusted are calculated as the difference between raw returns and the value-weighted market returns from the CRSP database over the previous 60 months.

Consistent with prior research, the ERC is the coefficient on *FERR*. The variable of interest in equation (4) is β_3, the coefficient on the interaction of *FERR* and *Compliance*, which we predict to be positive. A positive coefficient would indicate that market participants find the earnings of compliance firms more informative than the earnings of noncompliance firms.

To strengthen inferences that prompt compliance with COSO 2013 serves as a signal to market participants, we include in the sample pre-implementation quarterly observations beginning with firms' second fiscal quarter of 2013 through May 2016 and use a difference-in-difference estimation with the following regression model:

$$\begin{aligned} CAR = {} & \beta_0 + \beta_1 FERR_q + \beta_2 Compliance + \beta_3 FERR_q{*}Compliance + \beta_4 POST + \\ & \beta_5 FERR_q{*}POST + \beta_6 POST{*}Compliance + \beta_7 FERR_q{*}Compliance{*}POST + \\ & \mathrm{B}X + \beta Industry\ FE + \beta Quarter\text{-}Year\ FE + \beta FERR_q{*}X + \beta FERR_q{*}Industry\ FE + \\ & \beta FERR_q{*}Quarter\text{-}Year\ FE + \varepsilon_{it} \end{aligned} \quad (5)$$

where *POST* is an indicator variable for firms' quarterly observations that follow the initial disclosure of compliance with COSO 2013. This variable is then interacted with *FERR* and *COMPLIANCE* to capture whether investors perceive quarterly earnings surprises to be incrementally more informative for compliance firms relative to noncompliance firms following compliance. The variable of interest in equation (5) is β_7, which we predict to be positive.

IV. RESULTS

Descriptive Statistics and Correlations

Table 1 provides descriptive statistics for the variables used in the study. Panel A shows that approximately 91 percent of companies in the sample comply with the COSO 2013 framework in the first fiscal year following implementation. Panel B shows that the mean (median) values of the accounting conservatism measures, *C_SCORE*, *CON_ACC*, and *CON_SKEWNESS*, are 0.402 (0.369), 0.022 (0.012), and 0.457 (0.018), respectively. These

values are relatively higher than those found in Ahmed and Duellman (2013) probably due to differences in sample composition and the period under examination. Panel C shows the mean (median) values of the variables used in the short-window earnings response coefficients (ERC).

[Insert Table 1 here]

Table 2 provides the descriptive statistics for the compliance and noncompliance firms separately, and differences in mean and median values between the compliance and noncompliance firms. We examine mean differences using t-tests and median differences using Pearson chi-square tests. The mean differences in *Size*, *Leverage*, *KPMG*, *ICMW*, *Segments*, and *M&A* are statistically significant under the t-test. These initial results suggest that compliance firms are larger, more highly leveraged, less likely to be audited by KPMG, and have less material weaknesses in internal control compared to noncompliance firms. Compliance firms also are less complex in that they have fewer operating and geographic segments. However, inconsistent with our expectation, we find that compliance firms are more likely to engage in merger and acquisition activity, and some evidence that compliance firms have higher misstatement risk.

[Insert Table 2 here]

Table 3 presents the Pearson correlation coefficients among the variables. In Panel A, *Compliance* has a positive and significant ($p<0.01$) correlation with *Size*. In contrast, *Compliance* is negatively and significantly correlated with *KPMG*, *ICMW*, and *Segments* ($p<0.01$). Panel B shows that the correlation coefficient between *C_SCORE* and *CON_ACC* is positive and significant ($p<0.01$). The primary correlation of interest is between *Compliance*, and *C_SCORE* and *CON_ACC*, respectively. As expected, we find a significant positive correlation between two proxies for accounting conservatism, *C_SCORE* and *CON_ACC*, and *Compliance*. Consistent

with our expectation, *C_SCORE* has negative and significant (p<0.01) correlations with *Market-to-Book*, *Sales_Growth*, *Rd_Adv*, and *Litigation*. We also find positive and significant (p<0.01) correlation coefficients between *C_SCORE*, and *Size*, *Leverage*, *Firm_Age*, and *Big4*, respectively. On the other hand, *CON_ACC* is positively and significantly (p<0.01) correlated with *Leverage* and *Rd_Adv*, respectively, and negatively and significantly (p<0.01) correlated with *Size*, *ROA*, and *Firm_Age*.

[Insert Table 3 here]

Regression Results

Determinants of Compliance with COSO 2013 Framework

We next discuss our multiple variable regression results. Table 4 shows the results of estimating equation (1) to test Hypotheses 1a through 1h. Consistent with H1a, we find a negative and significant (p<0.001) coefficient on *ICMW* in columns (2) and (3), suggesting that firms with weaker internal controls are less likely to comply with the COSO 2013 framework. Consistent with H1b, we find that the coefficient on *Size* is positive and significant (p<0.001) across all three columns, which indicates that larger firms are more likely to comply with the COSO 2013 framework after the transition period. Consistent with H1e, we find that the coefficient on *Segments* is negative and significant (p<0.001) in all columns, suggesting that firm complexity delays compliance. In column (3), we find that firms with higher misstatement risk (*F_SCORE*) are less likely to comply promptly, consistent with H1h. We also find that the coefficient on *KPMG* is negative and significant (p<0.001) in all columns, consistent with our discussions with a COSO board member suggesting that KPMG was less likely to encourage clients' prompt compliance with the COSO 2013 framework. We fail to find evidence in support of H1c, H1d, H1f, and H1g.

[Insert Table 4 here]

COSO 2013 Framework and Accounting Conservatism

In this section, we investigate the relation between compliance with the COSO 2013 framework and accounting conservatism using our three proxies for accounting conservatism. Table 5 presents the results of the pooled OLS regression examining the conditional conservatism measure, *C_SCORE* as the dependent variable. We present the results without inclusion of the inverse Mills ratio in Column (1), and we present the results with the inverse Mills ratio in Column (2). In both columns, we find that the coefficient on *Compliance* is positive and significant ($p<0.001$), indicating that firms that comply with the COSO 2013 framework use more conservative accounting relative to noncompliance firms. The sign of coefficients on control variables are consistent across all columns. Although inconsistent with prior research findings (LaFond and Watts 2008; Goh and Li 2011; Ahmed and Duellman 2013), we find a positive and significant ($p<0.001$) coefficient on *Size* suggesting that larger firms use more conditionally conservative accounting. Consistent with Ahmed and Duellman (2013), the coefficient on *Leverage* is positive and significant ($p<0.001$), indicating that highly leveraged firms have more conservative accounting. We also find a negative and significant ($p<0.001$) coefficient on *Market-to-Book* consistent with Ahmed and Duellman (2013). The coefficient on *Firm_Age* is positive and significant ($p<0.001$), indicating that older firms exhibit greater accounting conservatism. We find insignificant associations between *C_SCORE* and *ROA*, *Sales_Growth*, *Rd_Adv*, *Litigation*, *Big4*, and the inverse Mills ratio, suggesting that more conservative accounting is not associated with the unobservable factors associated with prompt compliance.

[Insert Table 5 here]

Table 6 presents the results of the pooled OLS regressions with our second proxy of unconditional conservatism measure, *CON_ACC* as a dependent variable. Column (1) presents the results without the inverse Mills ratio, and Column (2) presents the results with the inclusion of the inverse Mills ratio. Consistent with Table 5, we find that the coefficient on *Compliance* is positive and significant ($p<0.01$) Consistent with the findings of Ahmed and Duellman (2013), we find a negative and significant ($p<0.001$) coefficient on *Size*, and a positive and significant ($p<0.01$) coefficient on *Leverage*. Unlike findings in Ahmed and Duellman (2013), we find a positive and significant ($p<0.001$) coefficient on *Market-to-Book*. We find a negative and significant ($p<0.001$) on *ROA* and on *Firm_Age*, indicating that that firms with a higher return on assets and that are older use less conservative accounting. The coefficient on *Rd_Adv* is positive and significant ($p<0.1$), consistent with Ahmed and Duellman (2013). We also find that the coefficient on *Big4* is positive and significant, indicating that firms audited by Big 4 auditors exhibit greater accounting conservatism. In Column (2), we find a negative and significant coefficient on the inverse Mills ratio.

[Insert Table 6 here]

Table 7 presents the results of the pooled OLS regressions examining the unconditional conservatism measure, *CON_SKEWNESS* as the dependent variable. Consistent with Tables 5 and 6, we find a positive and significant coefficient on *Compliance* in both columns. We also find that the coefficients on *Firm_Age*, *Rd_Adv*, *Litigation* are negative and significant. The coefficient on *Big4* is positive and significant in Column (2) and the coefficient on *Inverse_Mills_Ratio* is significantly negative, indicating the importance to control for the unobservable factors associated with COSO 2013 compliance.

[Insert Table 7 here]

Table 8 presents the results of the pooled OLS regression using the Basu (1997) specification for asymmetric timeliness as a proxy for conditional accounting conservatism. We find that the coefficient on *D*Return*Compliance* is positive and significant (p<0.10). This positive relation suggests that compliance firms tend to engage in more conservative accounting, compared to noncompliance firms. The coefficient on *D*Return*Size* is negative and significant (p<0.001), suggesting that larger firms use less conservative accounting. We find a positive and significant (p<0.001) coefficient on the coefficient on *D*Return*Leverage*. This finding indicates that higher leveraged firms have more conservative accounting.

[Insert Table 8 here]

Taken together, the results in Tables 5 through 8 suggest that firms that promptly comply with the COSO 2013 framework provide more conservative financial reporting relative to noncompliance firms. To the extent that conservative accounting reflects strong governance practices and a strong internal control environment, prompt compliance with the updated COSO framework is a means to alleviate agency costs by signaling this commitment to external parties.

Compliance with COSO's 2013 Framework and Investor Perceptions of Earnings Quality

Table 9 presents the results of the tests of our third hypothesis examining investor perceptions of compliance with the COSO 2013 framework. Specifically, we examine the short-window market response to quarterly earnings surprises. Consistent with prior research, we find a positive and significant earnings response coefficient (*FERR*) in both columns. With regard to H3, we find that the coefficient on *FERR*Compliance* in column (1) is positive and significant (p=0.002). We also find a positive and significant coefficient on *FERR*Compliance*POST* in column (2) (p=0.028). Taken together, these findings suggest that investors find quarterly earnings surprises more informative for firms complying with the COSO 2013 framework, relative

to noncompliance firms, and that this informativeness is incrementally higher following initial disclosure of compliance.

V. ADDITIONAL ANALYSES

Subsample Tests with Non-ICMW Firms

Our findings suggest that prompt compliance with the updated COSO framework can help to alleviate agency costs by signaling a commitment to strong internal controls. However, this signaling would be most important for firms without reported material weaknesses. Given that firms with reported material weaknesses in internal control are less likely to promptly comply with the COSO 2013 framework, we examine whether our results are robust to excluding these firms reporting material weaknesses in internal controls from the analyses. Table 10 presents the results of our tests examining the association between compliance with COSO 2013 and accounting conservatism as well as investor perceptions of the quarterly earnings of compliance firms. Panels A through C present the results using three proxies for accounting conservatism (*C_SCORE*, *CON_ACC*, and *CON_SKEWNESS*). In all three panels, we continue to find a positive and significant coefficient on *Compliance*. In Panel D, we re-examine our short-window ERC tests after excluding firms reporting material weaknesses in internal controls. We find consistent evidence that even among firms not reporting material weaknesses in internal controls, that investors perceive prompt compliance with the COSO 2013 framework as a signal of a commitment to a strong internal control environment.

[Insert Table 10 here]

Possibility of Omitted Variable Bias

To ensure the robustness of our results, we consider the possibility of omitted variable bias. Following Ahmed and Duellman (2013), we add cash flows from operations (*CFO*) and

volatility of sales (*Sales_Vol*) and re-estimate the previous equation (2) using three conservatism measures. *CFO* is measured as cash flows from operations divided by average total assets. *Sales_Vol* is calculated as the standard deviation of the natural sales between year *t*-1 and *t*-5. In this analysis, we exclude return on assets (*ROA*) because *CFO* and *ROA* are highly correlated and thus it may lead to multicollinearity problems.[5] The pooled OLS regression model is as follows:

$$\begin{aligned} ACC\_Conservatism_{i,t} = {} & \beta_0 + \beta_1 Compliance_{i,t} + \beta_2 Size_{i,t} + \beta_3 Leverage_{i,t} \\ & + \beta_4 Market\text{-}to\text{-}Book_{i,t} + \beta_5 Firm\_Age_{i,t} + \beta_6 CFO_{i,t} + \beta_7 Sales\_Vol_{i,t} \\ & + \beta_8 Sales\_Growth_{i,t} + \beta_9 Rd\_Adv_{i,t} + \beta_{10} Litigation_{i,t} + \beta_{11} Big4_{i,t} \\ & + \beta_{12} Inverse\_Mills\_Ratio_{i,t} + \Sigma_{i,t} Industry\_Dummy + \varepsilon_{i,t}, \end{aligned} \quad (6)$$

where *ACC_Conservatism* represents three proxies for accounting conservatism, *C_SCORE*, *CON_ACC*, and *CON_SKEWNESS* and all other variables as previously defined. We continue to find consistent results with those previously tabulated. Specifically, the coefficients on *Compliance* in all columns are positive and significant in Panel A. In Panel B, we find consistent results when limiting the sample to firms not reporting material weaknesses in internal control. Thus, our primary findings are robust to this alternative model specification.

[Insert Table 11 here]

VI. CONCLUSION

In this study, we examine whether prompt compliance with the COSO 2013 framework provides an indication of a commitment to a strong internal control environment. We first investigate determinants of prompt compliance with the new framework and then perform several analyses to investigate whether prompt compliance is associated with more conservative financial

[5] Our result shows that the Pearson correlation between *CFO* and *ROA* is about 0.80, indicating that they are highly correlated.

reporting. Finally, we examine whether investors perceive compliance with the updated framework as an indication of a firm's commitment to a strong system of internal control.

We find that compliance is more likely among firms that do not disclose internal control weaknesses, are larger, more highly leveraged, older, less complex, are involved in more merger and acquisition activity, have restructuring charges, and operate in a more litigious industry. We find robust evidence that firms that comply with the COSO 2013 framework provide more conservative financial reporting. Finally, we find that investors find quarterly earnings surprises more informative for firms complying with the COSO 2013 framework, relative to noncompliance firms, and that this informativeness is incrementally higher in the quarters following the initial compliance. These results suggest that prompt compliance provides a signal to market participants about the firm's control consciousness and governance.

This study contributes to the literature by examining whether prompt compliance with the COSO 2013 internal control framework can serve as a signal of a strong system of internal controls (e.g., Doyle et al. 2007a; Goh and Li 2011) to help alleviate agency costs and highlight the importance of prompt compliance with future framework updates, new rules, or new regulation involving internal control over financial reporting.

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Appendix A

Variable Definitions

Variables	Description
Panel A: Determinants of Compliance with the COSO 2013 Framework	
Compliance	An indicator variable equal to one if a firm uses the COSO 2013 internal framework after December 15, 2014 and zero otherwise;
Size	The natural logarithm of total asset (Compustat data item AT);
Leverage	The sum of long-term debt (Compustat data item DLTT) and short-term debt (Compustat data item DLC) divided by total assets (AT);
Firm_Age	The natural logarithm of the number of years the firm has CRSP database;
KPMG	An indicator variable equal to one if the firm was audited by KPMG during the current year zero otherwise (Audit Analytics database);
ICMW	An indicator variable that takes the value of one if a firm has internal control weaknesses (Audit Analytics database) and zero otherwise;
Going_Concern	An indicator variable that takes the value of one if a firm receives going concern opinion from its auditor and zero otherwise (Audit Analytics database) and zero otherwise;
Segments	The natural logarithm of the sum of the number of operating and geographic segments (Compustat Segments Database);
Foreign_Operations	An indicator variable equal to one if a firm reports foreign operations (Compustat data item FCA) and zero otherwise;
M&A	An indicator variable equal to one if a firm is engaged in a merger or acquisition (Compustat data item AQP or AQEPS) and zero otherwise;
Restructuring	An indicator variable equal to one if the firm has restructuring charges (Compustat data item RCP or RCEPS) and zero otherwise;
Aggregate_Losses	An indicator variable equal to one if earnings before extraordinary items (Compustat data item IB) in years t and t-1 sum to less than zero and zero otherwise;
Litigation	Following Francis, Philbrick, and Schipper (1994), we set an indicator variable equal to one if a firm falls in a high litigation risk industry as identified by SIC codes 2833–2836, 3570–3577, 3600–3674, 5200–5961, and 7370;
F_SCORE	A fraud risk measure developed by Dechow et al. (2011).
Panel B: Compliance with the COSO 2013 Framework and Accounting Conservatism	
Proxies for Accounting Conservatism	
C_SCORE	We use a measure of conditional conservatism, C-Score, developed by Khan and Watts (2009);
CON_ACC	Following Givoly and Hayn (2000) and Ahmed et al. (2002), we use a measure of unconditional conservatism, calculated as the net income before extraordinary items (Compustat data item IBC) plus depreciation expense (Compustat data item DP) minus cash flow from operations (Compustat data item OANCF), deflated by average total assets, and averaged over a 3-year period centered on year t, multiplied by negative one;

CON_SKEWNESS	Following Givoly and Hayn (2000) and Ahmed and Duellman (2013), we use another unconditional conservatism measure, *CON_SKEWNESS*. This measure is calculated as the difference between cash flow skewness and earnings skewness. The skewness of cash flow (earnings) is defined as $(x-\mu)^3/\sigma^3$ where x is cash flows (earnings), and μ and σ are the mean and standard deviation of cash flows (earnings) over the last five years;
Basu's Specification	A Basu's (1997) asymmetric timeliness measure.
Explanatory Variables	
Compliance	Same definition as in Panel A;
Size	Same definition as in Panel A;
Leverage	Same definition as in Panel A;
Market-to-Book	The ratio of market value of total assets to book value of total assets;
ROA	The operating income before depreciation (Compustat data item OIBDP) divided by total assets (Compustat data item AT);
Firm_Age	Same definition as in Panel A;
Sales_Growth	Same definition as in Panel A;
Rd_Adv	Research and development costs (Compustat data item XRD) plus advertising expense divided by sales;
Litigation	Same definition as in Panel A;
Big4	An indicator variable equal to one if the firm was audited by a Big 4 auditor during the current year zero otherwise (Audit Analytics database);
Inverse_Mills_Ratio	The inverse Mills ratio from equation (1).
NI	The earnings before extraordinary items divided by the market value of equity at the beginning of the fiscal year;
DR	An indicator variable equal to one if a firm's return is negative and zero otherwise;
RET	The buy-and-hold return over the fiscal year.
Panel C: Compliance with the COSO 2013 Framework and Investor Perceptions of Earnings Quality	
CAR	The abnormal (i.e., market-adjusted) returns cumulated over days [-1, +1] relative to the quarterly earnings announcement;
FERR	The analyst forecast error, measured as the difference between reported quarterly earnings per share and the most recent median consensus analyst earnings forecast, deflated by prior quarter stock price;
absFERR	The absolute value of *FERR*;
Loss	An indicator variable if net income for the quarter is less than zero;
Restructure	An indicator variable if special items is five percent or more of total assets;
DE	the ratio of short and long-term debt to total equity; (*QTR4*), (*LnMV*), and
QTR4	An indicator variable for the last fiscal quarter in the respective year;
LnMV	The natural log of the market value of equity;

STD_Return	The standard deviation of market-adjusted buy-and-hold returns over the previous 60 months;
POST	An indicator variable for firms' quarterly observations that follow the initial disclosure of compliance with COSO 2013;

Appendix B

- **Khan and Watts' C-Score**

Khan and Watts (2009) develop a measure of conditional accounting conservatism, *C-Score*. They estimate of the timelines of good news (*G-Score*) and bad news (*C-Score*). Following Khan and Watts (2009), we estimate *G-Score* and *C-Score* as follows:

$$X_i = \beta_1 + \beta_2 D_i + \beta_3 RET_i + \beta_4 D_i * RET_i + e_i \quad (1)$$

$$G - Score = \beta_3 = \mu_1 + \mu_2 SIZE_i + \mu_3 MTB_i + \mu_4 LEV_i + e_i \quad (2)$$

$$C - Score = \beta_4 = \lambda_1 + \lambda_2 SIZE_i + \lambda_3 MTB_i + \lambda_4 LEV_i + e_i \quad (3)$$

where, the subscript *i* indicates the firm, *X* is earnings, *RET* is returns, *D* is an indicator variable that equals to one when *RET*<0 and zero otherwise. *SIZE* is the logarithm of the market value of equity. *MTB* is the market-book-to ratio, measured as the ratio of market value of equity to book value of equity. *LEV* is firm leverage, measured as the total debt divided by market value of equity. Substituting β_3 and β_4 derived from equations (2) and (3) into regression equation (1) yield:

$$X_i = \beta_1 + \beta_2 D_i + RET_i * (\mu_1 + \mu_2 SIZE_i + \mu_3 MTB_i + \mu_4 LEV_i)$$

$$+ D_i * RET_i * (\lambda_1 + \lambda_2 SIZE_i + \lambda_3 MTB_i + \lambda_4 LEV_i)$$

$$+ (\delta_1 SIZE_i + \delta_2 MTB_i + \delta_3 LEV_i + \delta_4 D_i * SIZE_i + \delta_5 D_i * MTB_i + \delta_6 D_i * LEV_i) + e_i \quad (4)$$

Using annual cross-sectional regressions, we estimate above equation (4). Next, we obtain *G-Score* and *C-Score* from the estimated coefficients from equation (4). In our analysis, we use *C-Score* as a proxy for a conditional accounting measure.

Appendix C

- **Dechow et al.'s F-score**

Dechow et al. (2011) develop a fraud risk measure to capture a firms' financial statement manipulation. To do this, they use SEC's Accounting and Auditing Enforcement Releases (AAER) database. The F-score is derived from the following equation:

$$PV = -7.893 + 0.790*RSST + 2.518*\Delta REC + 1.191*\Delta INV + 1.979*SOFT\_ASSETS + 0.171*\Delta CS - 0.932*\Delta ROA + 1.029*ISSUE$$

where:

RSST = (ΔWC + ΔNCO + ΔFIN)/Average Total Assets, where Δ is the change operator, WC = (Current Assets − Cash and Short-Term Investments) – (Current Liabilities − Debt in Current Liabilities); NCO = Total Assets − Current Assets – Investments and Advances – (Total Liabilities − Current Liabilities − Long-Term Debt); FIN = (Short-Term Investments + Long-Term Investments) − (Long-Term Debt + Debt in Current Liabilities + Preferred Stock);

ΔREC = ΔAccounts Recevables/Average Total Assets;

ΔINV = ΔInventory/Average Total Assets;

SOFT_ASSETS = (Total Assets – PP&E – Cash and Cash Equivalent)/Total Assets;

ΔCS = percentage change in cash sales, where cash sales = Sales − ΔAccounts Recevables;

ΔROA = change in return on assets, where return on assets = Net Income/Total Assets;

ISSUE = an indicator variable that equals to one if the firm issued securities during the current period and zero otherwise.

Using the above *PV*, we calculate the *F_SCORE* as follows: $(e^{PV}/ (1+e^{PV}))/ (0.0037)$, where e indicates exponential function.

Table 1

Descriptive Statistics

This table presents descriptive statistics for relevant variables. Our sample contains firms with a fiscal year ending after December 15, 2014 through May 31, 2016. All variables are defined in Appendix A.

Panel A: Determinants of Compliance with the COSO 2013 Framework

Variables	N	Mean	Std. dev.	25th Pctl.	Median	75th Pctl.
Compliance	3,911	0.9113	0.2844	1.0000	1.0000	1.0000
Size	3,911	7.3714	1.8551	6.0325	7.3001	8.6322
Leverage	3,911	0.2788	0.2327	0.0760	0.2594	0.4117
Firm_Age	3,911	2.6089	1.0379	2.0794	2.8332	3.2958
KPMG	3,911	0.1792	0.3836	0.0000	0.0000	0.0000
ICMW	3,911	0.0547	0.2275	0.0000	0.0000	0.0000
Going_Concern	3,911	0.0194	0.1381	0.0000	0.0000	0.0000
Segments	3,911	1.8470	0.7942	1.3863	1.9459	2.3979
Foreign_Operations	3,911	0.4280	0.4949	0.0000	0.0000	1.0000
M&A	3,911	0.3797	0.4854	0.0000	0.0000	1.0000
Restructuring	3,911	0.3608	0.4803	0.0000	0.0000	1.0000
Aggregate_Losses	3,911	0.3102	0.4626	0.0000	0.0000	1.0000
Litigation	3,911	0.2690	0.4435	0.0000	0.0000	1.0000
F_SCORE	3,911	0.5109	0.5948	0.1462	0.2877	0.6342

Panel B: Compliance with the COSO 2013 Framework and Accounting Conservatism

Variables	N	Mean	Std. Dev.	25th Pctl.	Median	75th Pctl.
C_SCORE	2,815	0.402	0.166	0.288	0.369	0.486
CON_ACC	2,455	0.022	0.057	-0.005	0.012	0.035
CON_SKEWNESS	3,247	0.457	3.569	-0.899	0.018	1.661
Compliance	2,815	0.901	0.299	1.000	1.000	1.000
Size	2,815	7.474	1.892	6.117	7.370	8.808
Leverage	2,815	0.271	0.220	0.088	0.253	0.396
Market-to-Book	2,815	3.617	6.577	1.359	2.256	3.970
ROA	2,815	0.083	0.178	0.068	0.110	0.159
Firm_Age	2,815	3.029	0.663	2.565	2.996	3.466
Sales_Growth	2,815	0.064	0.321	-0.058	0.031	0.123
Rd_Adv	2,815	2.378	50.298	0.000	0.013	0.084
Litigation	2,815	0.293	0.455	0.000	0.000	1.000
Big4	2,815	0.847	0.360	1.000	1.000	1.000

Panel C: Compliance with the COSO 2013 Framework and Investor Perceptions of Earrings Quality						
Variables	N	Mean	Std. Dev.	25th Pctl.	Median	75th Pctl.
CAR	17,160	-0.001	0.078	-0.034	0.000	0.034
FERR	17,160	0.000	0.065	-0.001	0.000	0.002
Compliance	17,160	0.899	0.302	1.000	1.000	1.000
absFERR	17,160	0.006	0.065	0.001	0.002	0.004
Loss	17,160	0.243	0.429	0.000	0.000	0.000
Restructure	17,160	0.039	0.193	0.000	0.000	0.000
DE	17,160	0.343	104.820	0.122	0.563	1.193
QTR4	17,160	0.154	0.361	0.000	0.000	0.000
LnMV	17,160	7.536	1.682	6.315	7.443	8.589
STD_Return	17,160	0.030	0.006	0.025	0.025	0.037

Note: In all Panels, we present descriptive statistics after winsorizing all continuous variables at 1% and 99% levels.

Table 2

Descriptive Statistics of Compliance versus Noncompliance Firms

This table shows descriptive statistics for each group, compliance and noncompliance sample, for the sample period of December 15, 2014 through May 31, 2016. The sample consists of 3,911 firm-year observations. *, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed test). All variables are defined in Appendix A.

	Compliance Sample (n = 3,564 observations)					Noncompliance Sample (n = 347 observations)					t-test of Mean Differences	Pearson chi-squared test of Median Differences
Variable	Mean	Std. dev.	25th Pctl.	Median	75th Pctl.	Mean	Std. dev.	25th Pctl.	Median	75th Pctl.	t-statistic	chi-square statistic
Size	7.423	1.862	6.069	7.350	8.693	6.842	1.698	5.583	6.835	7.866	**-6.031*****	**16.812*****
Leverage	0.281	0.233	0.080	0.263	0.414	0.257	0.231	0.038	0.226	0.396	**-1.858***	**3.425***
Firm_Age	2.612	1.053	2.079	2.833	3.296	2.577	0.866	2.079	2.773	3.091	-0.696	1.989
KPMG	0.141	0.348	0.000	0.000	0.000	0.576	0.495	0.000	1.000	1.000	**16.025*****	**408.225*****
ICMW	0.048	0.214	0.000	0.000	0.000	0.121	0.327	0.000	0.000	0.000	**4.066*****	**32.380*****
Going_Concern	0.019	0.135	0.000	0.000	0.000	0.029	0.168	0.000	0.000	0.000	1.111	1.761
Segments	1.824	0.797	1.386	1.792	2.398	2.085	0.728	1.609	2.197	2.639	**6.325*****	**36.043*****
Foreign_Operations	0.424	0.494	0.000	0.000	1.000	0.470	0.500	0.000	0.000	1.000	1.630	2.707
M&A	0.384	0.486	0.000	0.000	1.000	0.337	0.473	0.000	0.000	1.000	**-1.748***	**2.923***
Restructuring	0.364	0.481	0.000	0.000	1.000	0.329	0.470	0.000	0.000	1.000	-1.335	1.717
Aggregate_Losses	0.308	0.462	0.000	0.000	1.000	0.329	0.470	0.000	0.000	1.000	0.764	0.601
Litigation	0.269	0.444	0.000	0.000	1.000	0.268	0.444	0.000	0.000	1.000	-0.043	0.002
F_SCORE	0.512	0.591	0.147	0.291	0.635	0.498	0.635	0.127	0.254	0.594	-0.407	**5.293****

Table 3

Pearson Correlation Coefficients

This table reports Pearson correlation coefficients between the variables. Correlations in bold indicate statistical significance at the 1 percent level (two-tailed test). The sample period is between December 15, 2014 and May 31, 2016. All variables are defined in Appendix A.

Panel A: Determinants of Compliance with the COSO 2013 Framework

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) *Compliance*	1.00													
(2) *Size*	**0.09**	1.00												
(3) *Leverage*	0.03	**0.30**	1.00											
(4) *Firm_Age*	0.01	**0.23**	**-0.07**	1.00										
(5) KPMG	**-0.32**	**0.04**	0.04	0.00	1.00									
(6) *ICMW*	**-0.09**	**-0.10**	0.02	**-0.06**	-0.01	1.00								
(7) *Going_Concern*	-0.02	**-0.13**	**0.15**	**-0.05**	0.00	**0.10**	1.00							
(8) *Segments*	**-0.09**	**0.37**	-0.01	**0.21**	0.00	-0.02	**-0.10**	1.00						
(9) *Foreign_Operations*	-0.03	**0.09**	**-0.09**	0.00	0.02	0.03	0.00	**0.34**	1.00					
(10) *M&A*	0.03	**0.12**	**0.05**	-0.02	-0.02	0.00	**-0.08**	**0.10**	**0.05**	1.00				
(11) *Restructuring*	0.02	**0.19**	**0.07**	**0.13**	0.02	0.00	-0.04	**0.20**	**0.15**	**0.19**	1.00			
(12) *Aggregate_Losses*	-0.01	**-0.37**	0.02	**-0.19**	**-0.05**	**0.10**	**0.18**	**-0.20**	0.02	**-0.07**	-0.02	1.00		
(13) *Litigation*	0.00	**-0.23**	**-0.19**	**-0.12**	-0.02	0.02	0.01	**-0.19**	0.01	-0.03	-0.03	**0.19**	1.00	
(14) *F_SCORE*	0.01	**0.08**	**0.08**	**-0.06**	-0.02	0.03	-0.04	0.02	-0.02	**0.31**	**0.07**	**-0.10**	**0.05**	1.00

Panel B: Compliance with the COSO 2013 Framework and Accounting Conservatism

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) *C_SCORE*	1.00											
(2) *CON_ACC*	0.01	1.00										
(3) ***Compliance***	**0.08**	**0.03**	1.00									
(4) *Size*	**0.35**	**-0.12**	**0.10**	1.00								
(5) *Leverage*	**0.74**	**0.06**	0.05	**0.32**	1.00							
(6) *Market-to-Book*	**-0.44**	0.03	0.04	-0.01	0.02	1.00						
(7) *ROA*	-0.02	**-0.35**	0.01	**0.31**	-0.04	0.05	1.00					
(8) *Firm_Age*	**0.06**	**-0.12**	**0.08**	**0.31**	-0.01	0.01	**0.12**	1.00				
(9) *Sales_Growth*	**-0.08**	0.00	-0.04	**-0.14**	-0.03	**0.09**	-0.02	**-0.11**	1.00			
(10) *Rd_Adv*	**-0.15**	**0.21**	0.01	**-0.25**	**-0.12**	**0.09**	**-0.54**	**-0.09**	**0.08**	1.00		
(11) *Litigation*	**-0.18**	0.03	0.01	**-0.19**	**-0.16**	**0.12**	**-0.18**	**-0.11**	**0.16**	**0.30**	1.00	
(12) *Big4*	**0.14**	-0.02	-0.01	**0.40**	**0.15**	0.03	**0.13**	**0.07**	**-0.06**	-0.05	-0.02	1.00

Table 4

Determinants of Compliance with the COSO 2013 Framework

This table shows the results of analyzing the determinants of compliance with the COSO 2013 framework. To do this, we use logit models with a binary dependent variable, *Compliance*. The *Compliance* is an indicator variable equal to one if a firm uses the COSO 2013 internal framework after December 15, 2014 and zero otherwise. The sample period is between December 15, 2014 and May 31, 2016. We use robust standard errors clustered at the firm level. The p-values are in parentheses. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed test). All variables are defined in Appendix A.

	Dependent Variable: Pr (*Compliance*=1)		
Explanatory Variables	**(1)**	**(2)**	**(3)**
ICMW		-1.145***	-1.130***
		(<0.001)	(<0.001)
Size	0.397***	0.370***	0.375***
	(<0.001)	(<0.001)	(<0.001)
Leverage	-0.129	-0.023	0.038
	(0.670)	(0.940)	(0.903)
Firm_Age	0.049	0.044	0.037
	(0.434)	(0.489)	(0.557)
Segments	-0.901***	-0.916***	-0.922***
	(<0.001)	(<0.001)	(<0.001)
Foreign_Operations	0.067	0.130	0.121
	(0.635)	(0.362)	(0.394)
M&A	0.079	0.077	0.140
	(0.565)	(0.581)	(0.325)
Restructuring	0.242*	0.238	0.235
	(0.098)	(0.108)	(0.113)
Aggregate_Losses	-0.037	0.008	-0.018
	(0.820)	(0.958)	(0.914)
Going_Concern		-0.347	-0.340
		(0.313)	(0.327)
Litigation	-0.237	-0.228	-0.222
	(0.303)	(0.328)	(0.344)
F_SCORE			-0.200*
			(0.091)
KPMG	-2.425***	-2.456***	-2.473***
	(<0.001)	(<0.001)	(<0.001)
Intercept	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Number of observations	3,780	3,780	3,780
Pseudo R^2	0.214	0.225	0.226

Table 5

Compliance with the COSO 2013 Framework and Accounting Conservatism

This table shows the results of the pooled OLS regression with a dependent variable, *C_SCORE*. The main explanatory variable of our interest is an indicator variable, *Compliance*. The *Compliance* is an indicator variable equal to one if a firm uses the COSO 2013 internal framework after December 15, 2014 and zero otherwise. The sample period is between December 15, 2014 and May 31, 2016. We use robust standard errors clustered at the firm level. The p-values are in parentheses. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed test). All variables are defined in Appendix A.

Explanatory Variables	Predicted Sign	Dependent Variable: *C_SCORE*	
		(1)	**(2)**
Compliance	+	**0.029*****	**0.028*****
		(<0.001)	(<0.001)
Size	–	0.009***	0.009***
		(<0.001)	(<0.001)
Leverage	+	0.557***	0.556***
		(<0.001)	(<0.001)
Market-to-Book	–	-0.012***	-0.012***
		(<0.001)	(<0.001)
ROA	?	-0.011	-0.008
		(0.310)	(0.477)
Firm_Age	?	0.010***	0.010***
		(<0.001)	(<0.001)
Sales_Growth	–	-0.005	-0.007
		(0.428)	(0.245)
Rd_Adv	+	-0.000	-0.000
		(0.521)	(0.513)
Litigation	?	0.001	0.001
		(0.868)	(0.829)
Big4	+	0.002	0.004
		(0.423)	(0.257)
Inverse_Mills_Ratio	?		-0.006
			(0.237)
Intercept		Yes	Yes
Industry fixed effects		Yes	Yes
Number of observations		2,815	2,680
Adjusted R^2		0.775	0.776

Table 6

Compliance with the COSO 2013 Framework and Accounting Conservatism

This table shows the results of the pooled OLS regression with a dependent variable, *CON_ACC*. The main explanatory variable of our interest is an indicator variable, *Compliance*. The *Compliance* is an indicator variable equal to one if a firm uses the COSO 2013 internal framework after December 15, 2014 and zero otherwise. The sample period is between December 15, 2014 and May 31, 2016. We use robust standard errors clustered at the firm level. The p-values are in parentheses. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed test). All variables are defined in Appendix A.

Explanatory Variables	Predicted Sign	Dependent Variable: *CON_ACC*	
		(1)	**(2)**
Compliance	+	**0.011*****	**0.006***
		(0.001)	(0.076)
Size	–	-0.003***	-0.004***
		(<0.001)	(<0.001)
Leverage	+	0.021***	0.021***
		(0.006)	(0.006)
Market-to-Book	–	0.001**	0.001***
		(0.013)	(0.007)
ROA	?	-0.104***	-0.110***
		(<0.001)	(<0.001)
Firm_Age	?	-0.006***	-0.006***
		(<0.001)	(<0.001)
Sales_Growth	–	0.001	-0.001
		(0.924)	(0.911)
Rd_Adv	+	0.006*	0.005*
		(0.054)	(0.053)
Litigation	?	0.001	0.000
		(0.785)	(0.914)
Big4	+	0.009**	0.011***
		(0.028)	(0.009)
Inverse_Mills_Ratio	?		-0.013**
			(0.039)
Intercept		Yes	Yes
Industry fixed effects		Yes	Yes
Number of observations		2,455	2,330
Adjusted R^2		0.308	0.313

Table 7

Compliance with the COSO 2013 Framework and Accounting Conservatism

This table shows the results of the pooled OLS regression with a dependent variable, *CON_SKEWNESS*. The main explanatory variable of our interest is an indicator variable, *Compliance*. The *Compliance* is an indicator variable equal to one if a firm uses the COSO 2013 internal framework after December 15, 2014 and zero otherwise. The sample period is between December 15, 2014 and May 31, 2016. We use robust standard errors clustered at the firm level. The p-values are in parentheses. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed test). All variables are defined in Appendix A.

Explanatory Variables	Predicted Sign	Dependent Variable: *CON_SKEWNESS*	
		(1)	**(2)**
Compliance	+	**0.828*****	**0.517****
		(<0.001)	(0.028)
Size	–	-0.063	-0.083*
		(0.176)	(0.075)
Leverage	+	0.495	0.459
		(0.131)	(0.167)
Market-to-Book	–	0.015	0.013
		(0.124)	(0.194)
ROA	?	-0.575	-0.626
		(0.390)	(0.349)
Firm_Age	?	-0.144*	-0.166**
		(0.075)	(0.044)
Sales_Growth	–	-0.275	-0.293
		(0.238)	(0.208)
Rd_Adv	+	-0.231**	-0.254**
		(0.030)	(0.017)
Litigation	?	-0.449*	-0.448*
		(0.075)	(0.072)
Big4	+	0.279	0.388**
		(0.130)	(0.037)
Inverse_Mills_Ratio	?		-1.055***
			(0.006)
Intercept		Yes	Yes
Industry fixed effects		Yes	Yes
Number of observations		3,152	3,040
Adjusted R^2		0.046	0.051

Table 8

Compliance with the COSO 2013 Framework and Accounting Conservatism: Basu Specification

This table shows the results of the pooled OLS regression with Basu's (1997) asymmetric timeliness measure as a proxy for conditional accounting conservatism. The *Compliance* is an indicator variable equal to one if a firm uses the COSO 2013 internal framework after December 15, 2014 and zero otherwise. The sample period is between December 15, 2014 and May 31, 2016. We use robust standard errors clustered at the firm level. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed test). All variables are defined in Appendix A.

Explanatory Variables	Predicted Sign	Basu's (1997) Specification	
		Estimated Coefficient	P-value
DR		-0.019	0.521
Compliance		0.014	0.202
Size		0.007***	0.001
Leverage		-0.041	0.185
Market-to-Book		-0.000	0.926
Litigation		-0.042***	0.006
*DR*Compliance*		0.033*	0.075
*DR*Size*		0.000	0.941
*DR*Leverage*		0.065	0.112
*DR*Market-to-Book*		-0.001	0.493
*DR*Litigation*		-0.022	0.130
Return	+	-0.114*	0.088
*Return*Compliance*	+	-0.035	0.432
*Return*Size*	+	0.026***	0.002
*Return*Leverage*	−	-0.124	0.306
*Return*Market-to-Book*	+	-0.001	0.643
*Return*Litigation*	−	-0.012	0.711
*DR*Return*	+	0.301**	0.031
DR*Return*Compliance	**+**	**0.240****	**0.005**
*DR*Return*Size*	−	-0.054***	0.001
*DR*Return*Leverage*	+	0.602***	<0.001
*DR*Return*Market-to-Book*	−	-0.007*	0.090
*DR*Return*Litigation*	+	-0.077	0.251
Intercept		Yes	
Industry fixed effects		Yes	
Number of observations		3,643	
Adjusted R^2		0.374	

Table 9

Short-Window ERC Tests

This table shows the results of the short-window ERC tests. The *Compliance* is an indicator variable equal to one if a firm uses the COSO 2013 internal framework after December 15, 2014 and zero otherwise. The sample period for the column (1) is between December 15, 2014 and May 31, 2016. The sample period for the column (2) is between 2013Q2 and May 31, 2016. We use robust standard errors clustered at the firm level. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed test). All variables are defined in Appendix A.

Explanatory Variables	Predicted Sign	(1) Dependent variable: *CAR*		(2) Dependent variable: *CAR*	
		Estimated Coefficient	P-value	Estimated Coefficient	P-value
FERR	+	4.711*	0.068	1.101***	0.007
Compliance		0.002	0.364	-0.004	0.311
FERR*Compliance	**+/?**	**0.446*****	**0.002**	-0.249	0.423
POST				-0.001	0.857
*FERR*POST*				-0.567*	0.079
*POST*Compliance*				0.005	0.331
FERR*Compliance*POST	**+**			**0.638****	**0.028**
absFERR		-0.116	0.127	-0.111	0.104
Loss		-0.019***	0.000	-0.022***	<0.001
Restructure		0.002	0.714	0.000	0.899
DE		-0.000***	0.007	-0.000**	0.010
QTR4		0.013***	0.000	-0.002	0.805
LnMV		-0.002***	0.000	-0.001***	<0.001
STD_Return		0.103	0.730	0.164	0.498
Intercept		Yes		Yes	
Industry fixed effects		Yes		Yes	
Qtr-year fixed effects		Yes		Yes	
*FERR*Controls*		Yes		Yes	
*FERR**Industry fixed effects		Yes		Yes	
*FERR**Qtr-year fixed effects		Yes		Yes	
Number of observations		17,160		28,035	
Adjusted R^2		0.074		0.039	

Table 10

Subsample Tests with Non-ICMW Firms

Compliance with the COSO 2013 Framework and Accounting Conservatism

This table shows the results of the pooled OLS regression with a dependent variable, *C_SCORE*. The main explanatory variable of our interest is an indicator variable, *Compliance*. The *Compliance* is an indicator variable equal to one if a firm uses the COSO 2013 internal framework after December 15, 2014 and zero otherwise. The sample period is between December 15, 2014 and May 31, 2016. We use robust standard errors clustered at the firm level. The p-values are in parentheses. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed test). All variables are defined in Appendix A.

Panel A		Dependent Variable: *C_SCORE*	
Explanatory Variables	Predicted Sign	**(1)**	**(2)**
Compliance	+	**0.032*****	**0.030*****
		(<0.001)	(<0.001)
Size	–	0.009***	0.009***
		(<0.001)	(<0.001)
Leverage	+	0.557***	0.557***
		(<0.001)	(<0.001)
Market-to-Book	–	-0.012***	-0.012***
		(<0.001)	(<0.001)
ROA	?	-0.012	-0.009
		(0.323)	(0.488)
Firm_Age	?	0.010***	0.011***
		(<0.001)	(<0.001)
Sales_Growth	–	-0.002	-0.005
		(0.730)	(0.425)
Rd_Adv	+	-0.000	-0.000
		(0.535)	(0.526)
Litigation	?	0.000	0.001
		(0.909)	(0.868)
Big4	+	0.003	0.004
		(0.415)	(0.230)
Inverse_Mills_Ratio	?		-0.009
			(0.103)
Intercept		Yes	Yes
Industry fixed effects		Yes	Yes
Number of observations		2,624	2,497
Adjusted R^2		0.771	0.771

Table 10 (Continued)

Subsample Tests with Non-ICMW Firms

Compliance with the COSO 2013 Framework and Accounting Conservatism

This table shows the results of the pooled OLS regression with a dependent variable, *CON_ACC*. The main explanatory variable of our interest is an indicator variable, *Compliance*. The *Compliance* is an indicator variable equal to one if a firm uses the COSO 2013 internal framework after December 15, 2014 and zero otherwise. The sample period is between December 15, 2014 and May 31, 2016. We use robust standard errors clustered at the firm level. The p-values are in parentheses. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed test). All variables are defined in Appendix A.

Panel B		Dependent Variable: *CON_ACC*	
Explanatory Variables	Predicted Sign	**(1)**	**(2)**
Compliance	+	**0.010*****	**0.007****
		(0.003)	(0.048)
Size	–	-0.003***	-0.003***
		(<0.001)	(<0.001)
Leverage	+	0.018**	0.019**
		(0.023)	(0.021)
Market-to-Book	–	0.001***	0.001***
		(0.004)	(0.003)
ROA	?	-0.111***	-0.112***
		(<0.001)	(<0.001)
Firm_Age	?	-0.006***	-0.006***
		(<0.001)	(<0.001)
Sales_Growth	–	0.002	0.002
		(0.718)	(0.748)
Rd_Adv	+	0.004	0.005
		(0.204)	(0.125)
Litigation	?	0.002	0.001
		(0.679)	(0.868)
Big4	+	0.010**	0.013***
		(0.018)	(0.004)
Inverse_Mills_Ratio	?		-0.010*
			(0.087)
Intercept		Yes	Yes
Industry fixed effects		Yes	Yes
Number of observations		2,298	2,183
Adjusted R^2		0.317	0.317

Table 10 (Continued)

Subsample Tests with Non-ICMW Firms

Compliance with the COSO 2013 Framework and Accounting Conservatism

This table shows the results of the pooled OLS regression with a dependent variable, *CON_SKEWNESS*. The main explanatory variable of our interest is an indicator variable, *Compliance*. The *Compliance* is an indicator variable equal to one if a firm uses the COSO 2013 internal framework after December 15, 2014 and zero otherwise. The sample period is between December 15, 2014 and May 31, 2016. We use robust standard errors clustered at the firm level. The p-values are in parentheses. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed test). All variables are defined in Appendix A.

Panel C		Dependent Variable: *CON_SKEWNESS*	
Explanatory Variables	Predicted Sign	**(1)**	**(2)**
Compliance	+	**0.834*****	**0.498***
		(<0.001)	(0.051)
Size	–	-0.057	-0.077*
		(0.208)	(0.100)
Leverage	+	0.558*	0.453
		(0.093)	(0.184)
Market-to-Book	–	0.023**	0.019**
		(0.015)	(0.044)
ROA	?	-0.918	-0.675
		(0.156)	(0.318)
Firm_Age	?	-0.133*	-0.156*
		(0.099)	(0.063)
Sales_Growth	–	-0.238	-0.183
		(0.307)	(0.449)
Rd_Adv	+	-0.220**	-0.208*
		(0.037)	(0.053)
Litigation	?	-0.442*	-0.457*
		(0.086)	(0.073)
Big4	+	0.375**	0.480**
		(0.048)	(0.013)
Inverse_Mills_Ratio	?		-1.092***
			(0.005)
Intercept		Yes	Yes
Industry fixed effects		Yes	Yes
Number of observations		3,009	2,830
Adjusted R^2		0.045	0.048

Table 10 (Continued)

Short-Window ERC Tests (Using Non-ICMW Firms)

This table shows the results of the short-window ERC tests. The *Compliance* is an indicator variable equal to one if a firm uses the COSO 2013 internal framework after December 15, 2014 and zero otherwise. The sample period for the column (1) is between December 15, 2014 and May 31, 2016. The sample period for the column (2) is between 2013Q2 and May 31, 2016. We use robust standard errors clustered at the firm level. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed test). All variables are defined in Appendix A.

Explanatory Variables	Predicted Sign	(1) Dependent variable: *CAR*		(2) Dependent variable: *CAR*	
		Estimated Coefficient	P-value	Estimated Coefficient	P-value
FERR	+	5.148*	0.055	1.802***	0.001
Compliance		0.003	0.132	-0.003	0.400
FERR*Compliance	**+/?**	**0.407****	**0.011**	-0.149	0.691
POST				-0.002	0.786
*FERR*POST*				-0.658*	0.074
*POST*Compliance*				0.005	0.345
FERR*Compliance*POST	+			**0.651****	**0.047**
absFERR		-0.049	0.575	-0.161*	0.069
Loss		-0.017***	0.000	-0.020***	0.000
Restructure		0.004	0.319	0.003	0.366
DE		-0.000***	0.006	-0.000***	0.007
QTR4		0.012***	0.000	-0.005	0.551
LnMV		-0.002***	0.000	-0.001***	0.000
STD_Return		-0.034	0.912	0.163	0.509
Intercept		Yes		Yes	
Industry fixed effects		Yes		Yes	
Qtr-year fixed effects		Yes		Yes	
*FERR*Controls*		Yes		Yes	
*FERR**Industry fixed effects		Yes		Yes	
*FERR**Qtr-year fixed effects		Yes		Yes	
Number of observations		16,020		26,391	
Adjusted R^2		0.070		0.035	

Table 11

Possibility of Omitted Variable Bias

Compliance with the COSO 2013 Framework and Accounting Conservatism

This table shows the results of the pooled OLS regression with each dependent variable, *C_SCORE*, *CON_ACC*, and *CON_SKEWNESS*. The main explanatory variable of our interest is an indicator variable, *Compliance*. The *Compliance* is an indicator variable equal to one if a firm uses the COSO 2013 internal framework after December 15, 2014 and zero otherwise. The sample period is between December 15, 2014 and May 31, 2016. We use robust standard errors clustered at the firm level. The p-values are in parentheses. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed test). All variables are defined in Appendix A.

Panel A		Dependent variables:					
Independent variables	Predicted sign	***C_SCORE***		***CON_ACC***		***CON_SKEWNESS***	
		(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Compliance	+	**0.029*****	**0.028*****	**0.009*****	**0.006** *	**0.722** ***	**0.494** **
		(<0.001)	(<0.001)	(0.009)	(0.075)	(<0.001)	(0.028)
Size	−	0.009***	0.009***	-0.005***	-0.006 ***	-0.227 ***	-0.241 ***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Leverage	+	0.553***	0.551***	0.032***	0.033 ***	1.517 ***	1.405 ***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Market-to-Book	−	-0.012***	-0.012***	0.000*	0.000 **	0.002	-0.001
		(<0.001)	(<0.001)	(0.097)	(0.049)	(0.836)	(0.941)
Firm_Age	?	0.009***	0.010***	-0.004***	-0.004 **	0.020	-0.026
		(<0.001)	(<0.001)	(0.007)	(0.014)	(0.802)	(0.752)
CFO	±	-0.012	-0.012	0.052***	0.043 **	10.296 ***	10.187 ***
		(0.343)	(0.346)	(0.009)	(0.035)	(<0.001)	(<0.001)
Sales_Vol	+	-0.008	-0.008	0.032***	0.037 ***	1.418 ***	1.309 ***
		(0.175)	(0.195)	(<0.001)	(<0.001)	(<0.011)	(<0.001)
Sales_Growth	−	-0.004	-0.006	-0.008	-0.010	-0.438 **	-0.381 *
		(0.550)	(0.373)	(0.179)	(0.109)	(0.049)	(0.098)
Rd_Adv	+	-0.000	-0.000	0.018***	0.018 ***	0.542 ***	0.522 ***
		(0.606)	(0.585)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Litigation	?	0.002	0.002	0.002	0.001	-0.417 *	-0.388
		(0.622)	(0.645)	(0.704)	(0.860)	(0.080)	(0.103)
Big4	+	0.002	0.003	0.010**	0.011 ***	0.339 **	0.394 **
		(0.502)	(0.300)	(0.019)	(0.008)	(0.057)	(0.032)
Inverse_Mills_Ratio	?		-0.006		-0.007		-0.651 **
			(0.189)		(0.253)		(0.039)
Intercept		Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Number of observations		2,809	2,674	2,455	2,330	3,241	3,049
Adjusted R^2		0.779	0.780	0.279	0.281	0.120	0.121

Table 11 (Continued)

Possibility of Omitted Variable Bias (Using Non-ICMW Firms)

Compliance with the COSO 2013 Framework and Accounting Conservatism

This table shows the results of the pooled OLS regression with each dependent variable, *C_SCORE*, *CON_ACC*, and *CON_SKEWNESS*. The main explanatory variable of our interest is an indicator variable, *Compliance*. The *Compliance* is an indicator variable equal to one if a firm uses the COSO 2013 internal framework after December 15, 2014 and zero otherwise. The sample period is between December 15, 2014 and May 31, 2016. We use robust standard errors clustered at the firm level. The p-values are in parentheses. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively (two-tailed test). All variables are defined in Appendix A.

Panel B		Dependent variables:					
Independent variables	Predicted sign	***C_SCORE***		***CON_ACC***		***CON_SKEWNESS***	
		(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Compliance	+	**0.032*****	**0.030*****	**0.008****	**0.007** *	**0.677** ***	**0.423** *
		(<0.001)	(<0.001)	(0.018)	(0.072)	(0.002)	(0.083)
Size	−	0.009***	0.009***	-0.005***	-0.005 ***	-0.203 ***	-0.218 ***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Leverage	+	0.556***	0.555***	0.028***	0.029 ***	1.468 ***	1.336 ***
		(<0.001)	(<0.001)	(0.001)	(0.001)	(<0.001)	(<0.001)
Market-to-Book	−	-0.012***	-0.012***	0.000**	0.001 **	0.009	0.006
		(<0.001)	(<0.001)	(0.030)	(0.021)	(0.317)	(0.490)
Firm_Age	?	0.009***	0.010***	-0.005***	-0.004 ***	-0.006	-0.037
		(<0.001)	(<0.001)	(0.003)	(0.006)	(0.939)	(0.660)
CFO	±	-0.006	-0.007	0.050**	0.045 **	9.575 ***	9.560 ***
		(0.630)	(0.613)	(0.020)	(0.041)	(<0.001)	(<0.001)
Sales_Vol	+	-0.009	-0.010	0.030***	0.035 ***	1.275 ***	1.193 ***
		(0.143)	(0.144)	(<0.001)	(<0.001)	(<0.011)	(<0.001)
Sales_Growth	−	-0.002	-0.004	-0.007	-0.008	-0.350	-0.274
		(0.811)	(0.547)	(0.252)	(0.195)	(0.135)	(0.260)
Rd_Adv	+	-0.000	-0.000	0.018***	0.018 ***	0.543 ***	0.533 ***
		(0.651)	(0.631)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Litigation	?	0.002	0.002	0.001	0.000	-0.491 **	-0.482 **
		(0.599)	(0.613)	(0.779)	(0.979)	(0.046)	(0.050)
Big4	+	0.003	0.004	0.012***	0.013 ***	0.428 **	0.495 ***
		(0.402)	(0.209)	(0.010)	(0.004)	(0.021)	(0.010)
Inverse_Mills_Ratio	?		-0.010*		-0.005		-0.781 **
			(0.073)		(0.409)		(0.026)
Intercept		Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Number of observations		2,621	2,494	2,298	2,183	3,009	2,830
Adjusted R^2		0.775	0.775	0.281	0.282	0.106	0.109